

MAJORITY AND MATHEMATICS

Majority is the name used to say the proportion of necessary votes to take decisions through a poll.

But there are different types of majority according to the importance of the decision.

Simple majority

It is elected the most voted option. The number of votes cast and abstentions don't matter.

Absolute majority

It is necessary to get more than a half of all members of the group, not the votes!

Qualified majority or supermajority

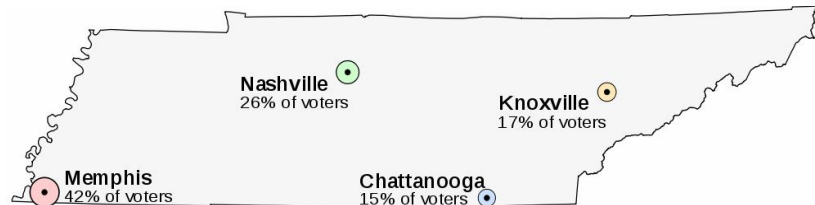
It is necessary an established percentage of votes. For instance, it could be two thirds, three fifths or four sevenths of the members of the group.

This method is used in important matters.

Capital of Tennessee

Imagine that Tennessee is having an election on the location of its capital.

The population of Tennessee is concentrated around its four major cities, which are spread throughout the State.



For this example, suppose that the entire electorate lives in these four cities and that everyone wants to live as near to the capital as possible.

The candidates for the capital are:

- Memphis, the state's largest city, with 42% of the voters, but located far from the other cities.
- Nashville, with 26% of the voters, near the centre of the State.
- Knoxville, with 17% of the voters.
- Chattanooga, with 15% of the voters.

The preferences of the voters would be divided like this:

| 42% of voters (close to Memphis) | 26% of voters (close to Nashville) | 15% of voters (close to Chattanooga) | 17% of voters (close to Knoxville) |
|---|---|---|---|
| 1. Memphis 2. Nashville 3. Chattanooga 4. Knoxville | 1. Nashville 2. Chattanooga 3. Knoxville 4. Memphis | 1. Chattanooga 2. Knoxville 3. Nashville 4. Memphis | 1. Knoxville 2. Chattanooga 3. Nashville 4. Memphis |

Here, Memphis has a simple majority (42%) of the first preferences, but not an absolute majority.

We can contrast this by looking at the fourth preferences, where the absolute majority of voters (58%) have placed Memphis last.

What do you propose to solve the problem in the best way?

VOTING IN A CLASS

You have to include the calculations on each vote.

Imagine you have to make some decisions in your class and you are going to make these decisions the same day.

There are three different questions to decide:

1. To elect a represent for the group by **simple majority**.
2. To put a date exam by **absolute majority**.
3. To choose a destination for a trip by **qualified majority of two thirds**.

There are 25 pupils in the class in the voting day of the 28 pupils that makes the group.

In the first vote, that is, to elect a represent from two candidates, there are 22 votes and 3 abstentions. What is the number of votes necessary to gain the poll?

For the second question, to put a date exam, there are 5 abstentions and 20 votes. How many votes does the proposal need to gain?

Finally, in the third poll, to decide a destination for a trip, there are 20 votes, 3 abstentions and 2 invalid votes. How many votes are needed to make the decision?